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Effectiveness of Defense Expenditure, Interest Payment and General Administration towards GDP Growth Rate of Pakistan's Economy

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This study examines the impact of Defense Spending (DDEt), Interest Payments, (IPt), and General Administration (GAt) on Pakistan's economic growth (GDPt) over the period 1994–9 to 2020–21. The study examines the relationship between economic growth and explanatory variables designated above.it has shown different positive and negative impacts. Stationarity of the variables (GDPt, DEEt, IPt, and GAt) was assessed using Augmented Dickey–Fuller (ADF) test, which indicated that the series were integrated at level 1(0) and at first difference I (1). The Autoregressive Distributed Lag (ARDL) model, along with the Bounds Test, Error Correction Mechanism (ECM), and diagnostic tests including the Variance Inflation Factor (VIF), Heteroscedasticity Test, Lagrange Multiplier (LM) Test, Normality Test, Granger Causality Test, Impulse Response Function, and Wald Test, revealed Significant negative effects of the independent variables on economic growth. The analysis also confirmed the presence of a long–run equilibrium association between the variables. The present study aimed at focusing towards defense spending, which had witnessed a relatively large negative effect, interest payments witnessed negative but significant effect and insignificant effects of ineffective General Administration, which leads to inefficiency, lacking transparency and poor governance, resulted in insignificant impact on economic growth of Pakistan's economy.

Keywords: Economic Growth, Defense Spending, Interest Payments, General Administration, Pakistan, Economy, ARDL Model, Augmented Dickey–Fuller (ADF) Test, Stationarity, Error Correction Mechanism (ECM) .

INTRODUCTION

Interest payments are the real sums of interest that the borrower paid in the designated year in the form of products, services, or foreign currency. According to Boboye & Ojo (2012), this component comprises interest paid on short–term debt, long–term debt, and IMF costs. Debt owed to nonresidents by citizens of an economy that is repayable in foreign money, products, or services and that has an original or extended maturity of more than a year is referred to as long–term external debt. According to Nord et al. (2013), debt with an initial maturity of one year or less is referred to as short–term external debt.

Economists have always looked for strategies to help nations achieve sustainable, long–term economic growth. When all other conditions are held constant, the repayment of debt in the form of principle and interest payments collectively referred to as debt service payment is found to pose a significant danger to a nation's ability to thrive economically (Shabbir, 2013). For a variety of reasons, such as poor revenue, a budget deficit, or low investment in the nation, nations borrow money from outside sources and then have to pay it back with certain commitments. Since a debt must be repaid, in excess of the amount it was originally taken out for, this payback or debt servicing causes issues for many nations, particularly low–income nations. Large debt service payments limit a nation's potential for growth in a number of ways. It depletes nations' finite resources and limits funding for internal development needs (Clements et al., 2003).

The relationship between defense spending and economic growth has been widely studied, yielding mixed results depending on the country, period, and methodology used.

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Broadly, the literature suggests three possible types of relationships:

***Positive impact*:** Some studies argue that defense spending can stimulate economic growth through increased demand, job creation, technological innovation, and infrastructure development. This is often called the Keynesian argument especially relevant in countries where defense industries play a central economic role.

***Negative impact*:** Others find that high military expenditures may crowd out productive investment, diverting resources from education, health, and infrastructure. This perspective is particularly emphasized in developing countries or nations with large military budgets relative to GDP.

The relationship between economic growth and government interest payments is complex and can be viewed through the lens of fiscal policy, debt dynamics, and macroeconomic performance.

1. ***Debt sustainability*:** The core relationship is often analyzed through the comparison of the interest rate (r) on government debt and the economic growth rate (g). If r > g, debt grows faster than the economy, leading to rising interest payments as a share of GDP, which can threaten fiscal sustainability. Conversely, if g > r, governments can stabilize or reduce debt ratios even with primary deficits.
2. ***Interest payments as a fiscal burden*:** As debt levels increase, so do interest payments, which can crowd out other government spending (on health, education, infrastructure, etc.), potentially slowing long–term economic growth. This is particularly problematic for developing countries or nations with high borrowing costs.
3. ***Impact on investment and growth*:** High interest payments may force governments to increase taxes or reduce productive spending, both of which can dampen economic growth. On the flip side, responsible borrowing that finances productive investments (like infrastructure) can enhance growth and improve the government's ability to service debt.
4. ***Confidence and risk premiums*:** In countries with unstable fiscal positions, rising interest payments can reduce investor confidence, leading to higher risk premiums and borrowing costs, further straining growth.

General Government Administration expenditures refer to the costs associated with running the public sector such as salaries of civil servants, administrative operations, and governance structures. The relationship between such expenditures and economic growth can be either positive or negative, depending on efficiency, transparency, and the quality of governance.

***Positive relationship*:** When administrative spending supports efficient governance, rule of law, public service delivery, and institutional quality, it can create an enabling environment for economic activity. Efficient administration improves policy implementation, regulatory oversight, and investor confidence, all of which are conducive to economic growth.

***Negative relationship*:** However, excessive or inefficient administrative spending—especially when associated with bureaucracy, corruption, or patronage—can divert resources from more productive uses like infrastructure, health, or education. In such cases, it may act as a drag on growth.

***Quality over quantity*:** Many studies emphasize that it is not the size of administrative spending that matters most, but its efficiency and effectiveness. Countries with lean but capable public administrations often outperform those with bloated and inefficient bureaucracies.

***Empirical evidence*:** Empirical studies on this topic are mixed. Some find a non–linear relationship, where a certain level of administrative spending is growth enhancing, but beyond that, it becomes counterproductive. Others emphasize the mediating role of institutional quality—suggesting that in countries with strong institutions, administrative spending is more likely to support growth. Ali & Ather (2024) examined the influence of defense spending upon economic growth of Pakistan over period of spell 1980–2013. Author adopted Stage Least Square Method for data analysis and interpretation for taking rightful decisions based on concrete findings, which revealed the direct and indirect effect of defense liability ton economic growth of Pakistan.

Asrian & Saharuddin (2024) analyzed the effectiveness of Investment, Interest Rates and Poverty on economic growth of Indonesia. In this regard, Multiple Linear Regression Model was used on date set ranged 1999–2020. Moreover, study utilized various econometric techniques revealed negative and significant impact of investment and poverty upon economic growth, whereas interest rates witnessed positive but insignificant influence on economic growth of Indonesia. Hartleytand Aldagt (2022) recorded significant link established between economic growth and two prominent indicators of Governance Effectiveness i.e. Efficiency and Creativity in Vietnam Economy.

Sen & Kayat (2020). The association among foreign direct investment, exports, economic growth and current account deficit examined in Pakistan, revealed significant and positive relationship between FDI, exports and growth in Pakistan in short as well as in long run. Findings also indicated negative and significant relationship between current account deficit and economic growth in short and long run. Granger Causality Test recorded unidirectional causality running from exports to economic growth (Zafar, 2020).Re–examined hypothesis of twin deficit tin context of Pakistan, Mexico and India by investigating Causal relationship between budget and trade deficits, aimed at providing insights into the expected causality between these deficits (Kulkarni & Erickson, 2019).

Hypothesis of triplet deficit in Nigeria, exploring the causal linkages among financial account, fiscal and current account deficits using GMM methodology and five–variate auto regressive distributed lag (ARDL) framework, suggesting

that Nigeria should adopt disciplined fiscal and monetary policies to reduce fiscal deficit, attract foreign investment, and stabilize exchange rates to achieve healthier external balances (Raji, 2019). Triple deficit hypothesis revealing bidirectional causal links uncovered between investment–saving deficit, budget deficit, and current account deficit in the short term, emphasizing the context–dependent nature of these dynamics (Altunoz, 2018).

The Twin Deficit Hypothesis was supported by the assessment of the Twin and Triple Deficit hypotheses, which showed unidirectional causal relationship between budget deficits and current account deficits. The Triple Deficit Hypothesis emphasized how domestic savings affect the current account and the saving–Investment gap. These findings informed policy decisions in developing economies. Author assessed the viability of triplet and twin deficit hypotheses in developing nations using analysis of panel causality. The study found one–directional causality from budget to current account deficit, promoting the hypothesis of twin deficit and establishes a strong linkage of current account and domestic savings partially validating hypothesis of triplet deficit for the group of the developing economies.

Research question

- Cause and effect of defense expenditure, interest payment and General Administration upon economic growth.

Research objectives: The present study contained following research objectives

1. Assess the effectiveness of defense expenditure on economic growth of Pakistan.
2. Investigate the effects of interest payment on economic growth of Pakistan.
3. Determine the effectiveness of General Administration upon economic growth of Pakistan.

***Problem statement*:** The study will explore findings pertaining to effectiveness of defense spending, interest payment and the role of General Administration in relationship with economic growth of Pakistan over period of time 1994–95 to 2020–21.

MATERIALS AND METHODS

The effects of defense expenditure, interest payments, and general administration ton Pakistan's GDP growth rate have been evaluated using time series data sets from 1994–1995 to 2020–21 from reliable bases (such as the Federal Bureau of Statistics and Pakistan Economic Surveys). Basic empirical analysis has made use of inferential statistics. Numerous statistical methods and tests have been employed in this context, including the Autoregressive Distributed Lag (A RDL) Model to investigate co–integrating relationships between parameters, the Augmented Dickey–Fuller (ADF)

Table 1. Unit root test for tested variables (LGDPt, DFEt, IPt, GAt).

Variables	ADF (Levels)		ADF in 1st Differences		Integration sequence through differencing I( )
	Intercept	Intercept and Trend	Intercept	Intercept and Trend	
LGDPt	–3.59	–3.52	–5.11	–4.99	I(0)
DFEt	–2.64	–1.93	–3.49	–4.18	I(1)
IPt	–2.13	–1.74	–3.87	–3.85	I(1)
GAt	–1.31	–2.33	–6.60	–6.46	I(1)

Note: variables with log–linear estimates;
95 percent critical values = 2.98 (Without Intercept and without Trend); and
95 percent critical values = 3.60 (With Intercept and Trend)

Table 2. Ordinary least square (OLS) for tested variables (LGDPt, DFEt, IPt, GAt).

Dependent Variable: Log(GDP)
Method: Least Squares
Sample: 1994–95 to 2020–21
Counted observations: 27 after adjustments

Variable(s)	Coefficient(s)	Std Error	t–Statistics	*P–Values**
DFE	0.773950	0.555446	1.393385	0.1768
IP	–1.442207	0.366509	–3.934985	0.0007*
GA	–0.215722	0.132605	–1.626799	0.1174
C	10.166120	2.118344	4.799089	0.0001
R2	0.493191	Durbin Watson Statistics (DW) = 2.425009		
Adjusted– R^2	0.427086			
F–Stat.	7.460671			
Prob(F–Stat.)	0.001163			

*Significant at 1%

Test for Unit Root (Dickey & Fuller, 1981), and Ordinary Least Square (OLS) R egression, which is also used to label the association between the tested variables., Long–term relationships are tested using the Bounds Test, and short–term dynamics are adjusted towards long–term equilibrium using the Error Correction Mechanism (ECM) (Pesaran and Shin, 1998). The following tests can be used to determine whether multicollinearity is present: the Granger Causality Test to determine whether tone variable is a good predictor of another; the Heteroscedasticity Test to determine whether heterogeneity exists; the Lagrange Multiplier(LM) Test to determine whether serial correlation or autocorrelation exists; the Normality Test to determine whether sample data is drawn from a normally distributed population; and the Impulse Response Function to show the path and strength of a causal association (Pesaran & Shin, 1998).Ultimately, the Wald Test has been used to determine if a group of independent variables are deemed "significant" for model either individually or collectively. As a suitable statistical package, E–Views has been used for the overall research study's time series econometric analysis.

***Specification of model*:** Model of Ahad (2017) implemented to measure the effectiveness of Defense Expenditure, Interest Payment and General Administration on GDP growth rate of Pakista n economy. The empirical log linear model form in the shape of natural logarithmic function is representatively articulated as; The econometric equation to assess the effects of Defense Expenditure *(DFEt),* nterest payments (*IPt)* and General Administration *(GAt)* on GDP Growth Rate of Pakistan is follows;

$GDPt = \alpha 0 + \alpha 1\ DFEt + \alpha 2\ IPt + \alpha 3\ Gat + et$ (i)

Where, *GDPt* = GDP Growth Rate of Pakistan in year t.
$\alpha 0$ = Constant Coefficient.
$\alpha 1$, $\alpha 2$, and $\alpha 3$ = Slopes Coefficient *DFEt* = Defense Expenditure in year t. *IPt*= nterest Payment in year t.
GAt = General Administration in year t.
et = Stochastic term in year t.

Table 3. ARDL Model for Tested Variables (LGDPt, DFEt, IPt, GAt).

Dependent Variable : Log(GDP)
Method : **ARDL** (1, 0, 0, 1)
Sample: 1994–95 to 2020–21
Counted observations : 26 after adjustments

Variables	Coefficients	SE	t–Statistic	P–Values*
LGDP(–1)	–0.282474	0.185667	–1.521401	0.1438
DFE	1.454723	0.690864	2.105656	0.0481**
IP	–2.028539	0.463971	–4.372122	0.0003*
GA	0.044198	0.197852	0.223387	0.8255
GA(–1)	–0.302405	0.192766	–1.568765	0.1324
C	12.34307	2.630179	4.692862	0.0001
R2	0.595966	Durbin Watson Statistics (DW) = 1.987610		
Adjusted $–R^2$	0.494958			
F–Statistics	5.900157			
Prob(F–Statistics)	0.001657			

*Significant at 1%; **Significant at 5%

Table 4. Estimating long–term associations between variables using the bound test (LGDPt, DFEt, IPt, GAt).

ARDL Bounds Test
Sample Range: 1994–95 to 2020–21
Counted observations: 26 after adjustments
HO: No long–run relationships

Test Statistics	Value(s)	K
F–Statistic	7.495287	3
Critical Bounds Value		
Sig.	I0 Bounds	I1 Bounds
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

Null Hypothesis = No Long Run Associations between variables. Alternate Hypothesis = Long Run Associations between variables.

When a linear combination of independent variable is used to represent the dependent variable's logarithm (Log), this is known as a log–linear model.

$LogGDPt = \alpha 0 + \alpha 1DFEt + \alpha 2IPt + \alpha 3GAt + et$ (ii)

***(ADF) test for unit roots*:** The integration sequence between the variables in the regression model is ascertained using this test. As shown in Table 1, it has been observed that this test tends to reject the null hypothesis of non– stationarity of all such variables, confirming that the corresponding independent variables (DFEt, IPt, and GAt) are found stationary at first difference I(1) and the corresponding dependent variable (LGDPt) is found stationary at level 1(0). The following is the estimated econometric formula to evaluate the long–term effects of General Administration (GAt), Interest Payment (IPt), and Defense Expenditure (DFEt) on Pakistan's GDP Growth Rate:

$LGDPt = \alpha 0 + 0.7739^{*}DFEt - 1.4422^{*}IPt - 0.2157^{*}GAt$ (iii)

Table 2 showed that, from 1994–1995 to 2020–21, the GDP Growth Rate of Pakistan (LGDPt) was negatively and significantly impacted by Interest Payment (IPt), whereas Defense Expenditure (DFEt) and General Administration (GAt) had negligible effects. The coefficient for defense expenditure is calculated to be 0.773950, which indicates that forevery unit increase in defense expenditure, the dependent variable, GDP growth rate, rises by 77.4%. The coefficient for Interest Payment is –1.442207, which indicates that for every unit increase in Interest Payment, the Dependent Variable as GDP Growth Rate falls by 144.2%. The coefficient value for General Administration is – 0.215722,

Table 5. For estimating short–term associations and long–term modifications among variables, use the Error Correction Mechanism (ECM). (LGDPt, DFEt, IPt, GAt).

Part–A

Dependent Variable : DLog (GDP)
Method: **Error Correction Mechanism**
Adjusted Sample Range: 1994–95 to 2020–21
Counted observations : 26 after adjustments

Variable	Coefficient	Std Error	t–Statistic	P–Values
C	0.137881	0.433440	0.318109	0.7535
D(DFE)	1.326487	1.652046	0.802936	0.4310
D(IP)	–0.725881	0.666367	–1.089312	0.2884
D(GA)	–0.011064	0.235679	–0.046944	0.9630
ECT(–1)	–0.807087	0.225139	–3.584836	0.0017*
R2	0.502059	Durbin Watson Statistics (DW) = 1.810274		
Adjusted– R^2	0.407214			
F–Stat.	5.293427			
Prob(F–Stat.)	0.004147			

Part–B

Variables	Model			
	Long run	p–value	Short run	Probabilities
DFEt	0.773950	0.1768	1.326487	0.4310
IPt	–2.028539	0.0007*	– 0.725881	0.2884
GAt	–0.215722	0.1174	– 0.011064	0.9630
ECT(–1)	n/a	n/a	–0.807087	0.0017*

Table 6. Variance inflation factors for determining whether multicollinearity exists for a given Variable (LGDPt, DFEt, IPt, GAt).

Variance Inflation Factors
Sample: 1994–95 to 2020–21
Counted observations: 27 after adjustments

	Coefficients	Uncentered	Centered
Variable(s)	Variance	VIF	VIF
DFE	0.308520	38.62028	3.622275
IP	0.134329	37.86516	1.950325
GA	0.017584	8.469028	2.312523
C	4.487380	47.91973	NA

Table 7. Heteroscedasticity Test for variables (LGDPt, DFEt, IPt, GAt).

Heteroscedasticity Test:			
F–Stat.	0.704684	P–Value. F(3,23)	0.5590
Obs*R^2	2.272809	P–Value Chi–Square(3)	0.5178
Scaled explained SS	1.172162	P–Value. Chi–Square(3)	0.7597

Table 8.Lagrange Multiplier (LM) Test for checking serial correlation among variables (LGDPt, DFEt, IPt, GAt).

Serial Correlation LM Test:			
F–Stat.	2.643212	P–Value. F(2,21)	0.0947
Obs*R^2	5.429930	P–Value. Chi–Square(2)	0.0662

Table 9. Granger Causality Test for tested variables (LGDPt, DFEt, IPt, GAt).

Pairwise Granger Causality Tests
Sample Range: 1994–95 to 2020–21
Lags: 2

Ho:	**Obs**	**F–Statistic**	**P–Values***
DFE not Granger Causing LGDP	25	0.46953	0.6320
LGDP not Granger Causing DFE		0.10581	0.9001
IP not Granger Causing LGDP	25	2.76157	0.0873***
LGDP not Granger Causing IP		1.94283	0.1694
GA not Granger Causing LGDP	25	1.84744	0.1835
LGDP not Granger Causing GA		0.34730	0.7108
IP not Granger Causing DFE	25	0.55752	0.5813
DFE not Granger Causing IP		6.02109	0.0090*
GA not Granger Causing DFE	25	0.08072	0.9227
DFE not Granger Causing GA		1.17189	0.3302
GA not Granger Causing IP	25	0.37699	0.6907
IP not Granger Causing GA		2.82759	0.0829***

*Significant at 1%; ***Significant at 10%

which indicates that for every unit increase in General Administration, the dependent variable, GDP Growth Rate, falls by 21.6%. According to Table 2, the independent variables D FEt, IPt, and GAt are predicting 49 percent variation in the dependent variable, LGDPt, with an R2 value of 49%. The calculated value is 7.4 (P>0.01), indicating the model's overall unfitness and total combined effects. Additionally, DW (2.43) shows no autocorrelation in the model and falls within the permitted range of 1.5 to 2.5.

The Auto–Regressive Distribute Lags Model (ARDL), which incorporates response and explanatory variable lags, is applied in Table 3. After applying the ARDL approach, the results of Table 3 showed that, while the lag values of Defense Expenditure (P<0.05) had a positive and significant influence on Pakistan's GDP Growth Rate, Interest Payment(P<0.01) had a negative and significant influence, and General Administration had an insignificant influence. This is because both order of integration at level I(0) and at first difference I(1) conditions prevail in Table 1.As a result, AR DL looked for co–integrating correlations between the model's tested variables. According to Table 3, the independent variables DFEt, IPt, and GAt are predicting 59% of the variation tin the dependent variable, LGDPt, with an R2 value of 59%. The calculated model's F value, which is 5.9, indicates substantial associations (P<0.01) between the dependent and independent variables. This indicates the model's overall fitness and total combined effects.

To make sure there are long–term links among the variables being tested in the model, the Bound Test is used. By rejecting the H_O hypothesis and accepting the HI ypothesis, which demonstrates the long–term association between the variables in the model, Table 4 showed the results of the Bound test, which showed that the value of the F statistics was 7.49, more than the upper bound critical value.

The estimated econometric equation for short run to measure the impact of Defense Spending *(FEEt),* Interest Payment *(IPt)* and General Administration *(GAt)* on GDP Growth Rate of Pakistan in short run is as follows;

$$LGDPt = \alpha 0 + 1.326487^{*}DFEt - 0.725881^{*}IPt - 0.011064^{*}GAt - 0.807087\ ECT(-1) \quad \text{———————iv}$$

Short–term ties were shown by the negligible levels of interest payments, defense expenditures, and general administration in Table 5. There is a correlation and a long–term relationship since all of the tested variables are stationary at I(1) and the error term is at I (0). According to Table 5 (Part–A), the co–integrating equation value is negative (–0.807087), and the

Table 10. Wald Test for tested variables (LGDPt, DFEt, IPt, GAt).

Wald Test: ARDL (1,1)			
Test Statistics	**Value(s)**	**Df**	**P–Values***
F–Statistic	5.900157	(5, 20)	0.0017*
Chi–square	29.50079	5	0.0000*
H_O: C(1)=0,C(2)=0,C(3)=0,C(4)=0,C(5)=0			
HO Summary:			
Normalized Restriction (= 0)		**Value(s)**	**Standard Error**
C(1)		–0.282474	0.185667
C(2)		1.454723	0.690864
C(3)		–2.028539	0.463971
C(4)		0.044198	0.197852
C(5)		–0.302405	0.192766

Linear restrictions in coefficients; **Significant at 1%*

pace of adjustment is 81% per unit of time, which is significant (P<0.01) and shows that there is convergence from short–term dynamics to long–term equilibrium. The error correction term's value is –0.81, which indicates that 81 % of the mistake will be fixed in the upcoming period when the relationship converges to the long run. Table 5 (Part–B) offers both short–term and long– term adjustments for long–term equilibrium.

The presence of significant multicollinearity in the model is indicated by Variance Inflation Factors (VIF) ≥ 10. Table 6 showed that there was no serious multicollinearity in the model because the Centered VIF values of the investigated variables (DFEt, IPt, and GAt) were less than 10.

Null Hypothesis: No Heteroscedasticity Alternate Hypothesis: Heteroscedasticity

According to Table 7, the model has homoscedasticity (no heteroscedasticity) because the P– values of the F–Statistics and Chi–square are greater than the 5% level of significance.

Null Hypothesis: No serial correlation between variables

Alternate Hypothesis: Serial correlation between variables

Examining Table 8 showed that all evaluated variables (DFEt, IPt, and GAt) had P–Values greater than the 5% significance level (P>0.05), indicating that the model is free of serial correlation and autocorrelation and does not require treatment. As a result, HO is accepted.

Null Hypothesis: Sample data has been drawn from normally distributed population

Alternate Hypothesis: Sample data hasnot been drawn from normally distributed Population

Given that Figure 1's P–value for the Normality Test (0.56) is higher than the 5% (P>0.05) level of significance, HO indicates that the sample data was taken from a normally distributed population. Therefore, the model's correlations between the tested variables are normal.

A review of Table 9 showed that there was no causality among the remaining combinations in the model, but there was a unidirectional causal relationship between Interest Payment and LGD P (P<0.10), between Interest Payment and Defense Expenditure (P<0.01), and between Interest Payment and General Administration (P<0.10), suggesting a long–term relationship in the cointegration test.

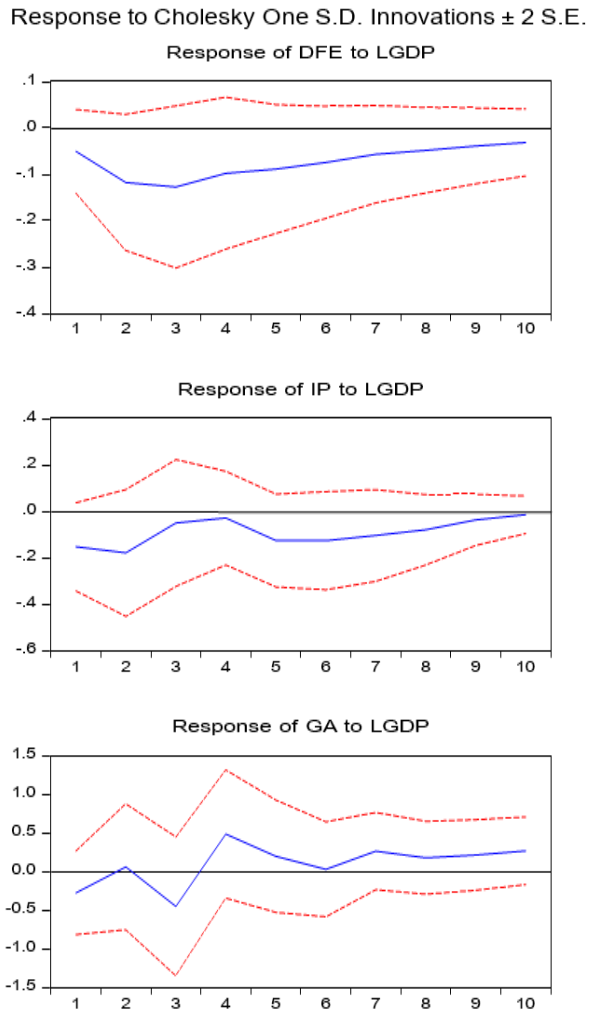

Figure 2. Impulse response analysis for tested variables (LGDPt, DFEt, IPt, GAt).

The three reactions of defense expenditure, interest payment, and general administration to LGDP are shown in Figure 2 as red and blue lines, respectively. The blue line represented the Impulse Response Function, and the red line represented the 95% confidence interval.

One standard deviation shock, impulse, or innovation given to LGDP caused sharp decline in defense expenditure from the first to the second period tin a negative state, followed by gradual declines from the second to the third, sharp increases from the third to the fourth, and then gradual increases from the fourth to the tenth period, according to the Response of Defense Expenditure to LGDP case study.

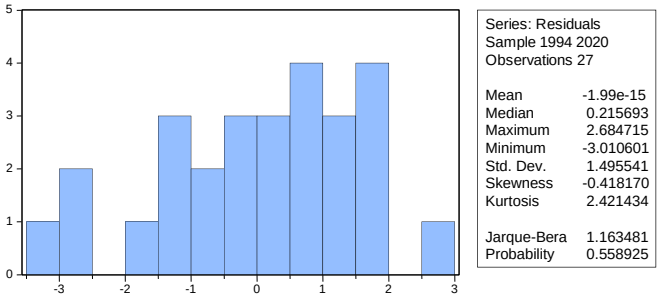

Figure 1. Normality Test for tested variables (LGDPt, DFEt, IPt, GAt).

Regarding the Response of Interest Payment to LGDP, it was found that a single standard deviation shock, impulse, or innovation to LGDP caused the interest payment to gradually decline from the first to the second period in a negative state, then sharply increase from the second to the third, then gradually increase from the third to the fourth, then sharply decline from the fourth to the fifth, then stabilize from the fifth to the sixth, and finally gradually increase from the sixth to the tenth period.

One standard deviation shock, impulse, or innovation given to LGDP caused sharp increase in General Administration from the first to the second period, followed by sharp declines from the second to the third period that turned negative, sharp increases from the third to the fourth period that turned positive, sharp declines from the fourth to the sixth period, sharp increases from the sixth to the seventh period, gradual declines from the seventh to the eighth period, and then gradual increases from the eighth to the tenth period.

Since there were both positive and negative reactions, the shock to LGDP revealed a symmetric al influence on Pakistan's defense spending, interest payments, and general administration over the short and long terms.

Null Hypothesis: The value of explanatory variable is zero (0)

Alternate Hypothesis: The value of explanatory variable is not equal to zero (0).

The null hypothesis, which assumes that the values of t he independent variables are zero (0), is rejected, confir ming that all of the independent variables are significant for a model, as the Wald Test results in Table 10 showed that the probability values at the Ftest and ChiSquare values in the tested variable (i.e., DFEt, IPt, and GAt) are less than 5% significance level l ($P<0.01$).

RESULTS

The results of this analysis showed that while defense spending had a comparatively significant negative effect on Pakistan's economic growth; it also had to slight positive impact due to the steady rise of Keynesian aggregate demand. The economy will expand because of increased use of tidal capital, increased employment, increased profit, and increased investment. In addition to directly creating job opportunities, defense spending has the potential to indirectly increase economic production by transferring human capital and cutting–edge technologies to the civilian economy. However, because it takes funds, people, and material resources away from government initiatives that could do more to spur growth, defense–spending ng also has opportunity costs

DISCUSSION

The relationship between defense spending and economic growth in Pakistan, revealing a complex and multifaceted dynamic. While defense expenditure has been observed to generate some short–term macroeconomic benefits such as stimulating aggregate demand, mobilizing idle resources, supporting job creation, and promoting technological innovation—these gains are largely transitory and fail to translate into sustained economic progress.

While defense spending may offer some short–term macroeconomic stimulation and technological benefits, the findings suggest that its long–term effects on economic growth are generally adverse. The results show that Pakistan should aim for a more balanced allocation of resources, ensuring that defense needs do not undermine investment in human capital and development sectors, which are essential for sustainable economic growth. The long–term impact of defense spending on economic growth, as demonstrated through empirical analysis and theoretical grounding, appears to be largely negative. The underlying reasons stem primarily from the opportunity cost associated with large–scale military expenditure. In a resource–constrained developing economy like Pakistan, where the needs for public investment in human capital and basic infrastructure are significant, allocating a disproportionate share of the national budget to defense undermines the potential for inclusive and sustainable growth. Furthermore, the results conclude that defense spending often leads to the accumulation of non–productive capital such as

arms and military installations that do not contribute directly to enhancing productivity, reducing poverty, or improving social welfare. In contrast, sectors like education, healthcare, clean energy, digital infrastructure, and social protection systems have been shown globally to yield higher economic and social returns in the long run. When fiscal resources are diverted from these sectors toward military purposes, the country sacrifices potential gains in productivity, innovation, and human development.

***Conclusion*:** Interest payments are actually the cost a borrower pays to a lender for the use of borrowed money. The findings of study revealed that interest payments witnessed negative and significant impact on economic growth by enhancing borrowing costs for traders' and businesses, potentially adding to reduce investment and spending, while lower level of rates can stimulate growth by making borrowing more affordable.
Study concluded that ineffective General Administration leads to inefficiency, lacking transparency and poor governance, witnessed insignificant impact on economic growth, failing to generate favorable environment for businesses and investments, while resulted in ensuring inequitable resource allocation. Hence, there is need to make sure effective strategy for sustaining effective General Administration so necessary for ensuring efficiency, transparency and good governance in Pakistan.

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***Policy referred*:** Twin Deficit Hypothesis (TDH); Triple Deficit Hypothesis (TrDH); Debt Sustainability Policy:Defense and Fiscal Policy; Public Administration Reform Policy.

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